

REMARKS

Status of the Claims

Claims 5-8 and 41 stand rejected. Claims 1-4 and 9-40 were previously cancelled, without prejudice. In this response, claim 5 is amended and claim 42 is added. Accordingly, claims 5-8, 41, and 42 now are pending.

Claim Amendments

As noted herein, claim 5 is amended and claim 42 is added. Support for the amendment and new claim can be found throughout the Specification as filed, and thus, do not introduce new matter.

The Applicants would also like to specifically note that the amendment to claim 5 should not be construed as introducing matter that was previously non-elected. The current amendment to claim 5 is regarding a system controller having the claimed configuration. As illustrated in FIGURE 1 as filed, the electroplating system 100 includes a system controller 106. System controller 106 is common to various embodiments described in the Specification as filed. *See, e.g.*, system controller 106 of FIGURE 3 and FIGURE 5. System controller 106 is described as being configured to “adjust the chemicals, water and/or surfactant supplied by tanks 108a-108b . . . if not all of the thresholds and limits [of a qualification analysis] are met.” *See* p. 9, lines 24-26 through p. 10, line 1. Accordingly, it is respectfully submitted that the system controller as disclosed in the Specification as filed may be common to all embodiments.

Rejections under 35 U.S.C. § 103

1. Hetherington

Claims 5-7 and 41 were rejected under § 103(a) as being unpatentable over Hetherington (U.S. Patent No. 2,461,276) (hereinafter “Hetherington”). The Applicants respectfully disagree with these rejections.

Hetherington is cited as teaching all recitations except for the recited chamber. The Applicants submit, however, that in addition to failing to teach the recited chamber, Hetherington also fails to teach or suggest the claimed piping system. Refer, for example, to Hetherington’s stock A and stock B, which is asserted in the Office Action as being the recited tanks. See Office Action, page 2. Material from stock A and stock B is mixed prior to metering by metering pump 10, and then the mixed solution is heated by heater 15. See Hetherington, FIG. 1 and accompanying text. Thus, Hetherington cannot be said to teach or suggest the piping system of claim 5 having a plurality of segments, including a plurality of in-line heaters for a subset of the segments, to separately route, in-line heat, and after heating, mix, at a mixing point, the constituent chemicals of the plating solution to form the plating solution, substantially just prior to application to the one or more wafers.

In addition, claim 5, as now amended, recites a system controller configured to receive results of a qualification analysis of the plating solution and control a supply to the mixing point of the constituent chemicals based on the qualification analysis. Nowhere does Hetherington teach or suggest such a system controller.

Claim 5, therefore, is patentable over Hetherington. Claims 6, 7, and 41, as well as new claim 42, depend from claim 5. Claims 6, 7, 41, and 42, therefore, also are patentable over Hetherington.

2. Ebberts

Claims 5-8 and 41 were rejected under § 103(a) as being unpatentable over Ebberts (U.S. Patent No. 6,554,207) (hereinafter “Ebberts”). The Applicants respectfully disagree with these rejections.

Ebberts is cited as teaching all recitations except for the recited chamber but that the claimed recitation is with respect to the manner in which the claimed apparatus is intended to be employed and thus does not differentiate from Ebberts. The Applicants submit, however, that the claimed point-of-use process chamber, as amended, including a drain and configured to apply a plating solution to plate one or more wafers by spray, microcell, or spin on structurally defines over Ebberts. Nowhere does Ebberts teach or suggest the claimed structural recitations of a chamber, a drain, and a configuration for applying the plating solution by spray, microcell, or spin on.

In addition, claim 5, as now amended, recites a system controller configured to receive results of a qualification analysis of the plating solution and control a supply to the mixing point of the constituent chemicals based on the qualification analysis. Nowhere does Ebberts teach or suggest such a system controller.

Claim 5, therefore, is patentable over Ebberts. Claims 6-8 and 41, as well as new claim 42, depend from claim 5. Claims 6-8, 41, and 42, therefore, also are patentable over Ebberts.

3. Segawa/Li

Claims 5-8 and 41 were rejected under § 103(a) as being unpatentable over Segawa et al. (U.S. Patent No. 6,638,564) (hereinafter “Segawa”) in view of Li et al. (U.S. Pub. No. 2003-0235983) (hereinafter “Li”). The Applicants respectfully disagree with these rejections.

Segawa is cited for the proposition that it allegedly teaches a chamber, a plurality of tanks, and a piping system, while Li is cited for the proposition that it allegedly teaches using in-line heaters, which Segawa fails to teach.

The Applicants agree that Segawa fails to teach the recited piping system. At a minimum, Segawa fails to teach or suggest a plurality of in-line heaters for a subset of the segments, to separately route, in-line heat, and after heating, mix, at a mixing point, the constituent chemicals of the plating solution to form the plating solution, substantially just prior to application to the one or more wafers. Rather, Segawa holds solutions separately in heated tanks, remaining continuously heated. See Segawa, column 18, lines 5-14 (“The cobalt chelating solution 51a is kept heated by a heater 52a . . . [and] maintained at a predetermined temperature”).

Li fails to remedy Segawa’s deficiency. Li is explicitly directed to in-line heating of a plating bath solution. See, e.g., Li, Abstract. In-line heating of a plating bath solution is clearly not the claimed in-line heating of constituent chemicals of a plating solution (i.e., prior to mixing the constituent chemicals to form the plating solution). Thus, even if one were to combine Segawa with Li, one would not arrive at the claimed apparatus.

In addition, claim 5, as now amended, recites a system controller configured to receive results of a qualification analysis of the plating solution and control a supply to the mixing point of the constituent chemicals based on the qualification analysis. Neither Segawa nor Li can be said to teach or suggest such a system controller.

Claim 5, therefore, is patentable over Segawa and Li. Claims 6-8 and 41, as well as new claim 42, depend from claim 5. Claims 6-8, 41, and 42, therefore, also are patentable over Segawa and Li.

CONCLUSION

In view of the foregoing, the Applicants respectfully submit that claims 5-8, 41, and 42 are in a condition for allowance. Accordingly, a Notice of Allowance is respectfully requested.

It is noted that claimed subject matter may be patentably distinguished from the cited references for reasons in addition to those set forth herein, reasons such as those articulated in papers previously submitted regarding the subject application or related applications. Likewise, it is noted that the Applicants' failure, if any, to comment directly upon any of the positions asserted in the Office Action does not indicate tacit agreement or acquiescence with those asserted positions.

The Examiner is invited to contact the undersigned directly at 503-796-3756 with any questions.

If any fees are due in connection with filing this paper, the Commissioner is authorized to charge Deposit Account No. 500393.

Respectfully submitted,
SCHWABE, WILLIAMSON & WYATT, P.C.

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/Angela Sagalewicz/
Angela Sagalewicz
Reg. No. 56113

Pacwest Center, Suite 1900
1211 SW Fifth Avenue
Portland, Oregon 97204
Telephone: (503)222-9981 (main)
(503) 796-3756 (direct)